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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,916	11/24/2003	Virgil Cotoco Ararao	27-006	6546
22898	7590	10/30/2007		
ISHIMARU & ZAHRT LLP 333 W. EL CAMINO REAL SUITE 330 SUNNYVALE, CA 94087			EXAMINER NGUYEN, THANH T	
			ART UNIT 2813	PAPER NUMBER
			MAIL DATE 10/30/2007	DELIVERY MODE PAPER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/721,916
Filing Date: November 24, 2003
Appellant(s): ARARAO ET AL.

Mikio Ishimaru
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/06/07 appealing from the Office action
mailed 1/29/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

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(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,008,991

Hawthorne et al.

12-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 21-30 are stand rejected under 35 U.S.C. 102(b) as being anticipated by Hawthorne et al. (U.S. Patent No. 6,008,991), previously applied.

Referring to figures 3-4, 9-11, Hawthorne et al. teaches a method for fabricating a semiconductor heat spreader, comprising:

providing a unitary metallic plate (see figures 9-10); and

forming the unitary metallic plate into:

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a panel(68/114);

channel walls depending from the panel (68/114) to define a channel (44/110) between the channel walls and the panel for receiving a semiconductor therein (see figures 3-4, 9-10);

at least two feet (70, see figures 3-4, 9-10) extending from respective channel walls for attachment to a substrate (138); and

at least one external reversing bend (72a/72b/116/118/146/148, see figures 4, 9-10);

a cross-sectional profile of the plate that is substantially constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate (see figures 3-4, 9-10).

Regarding to claims 2, 9, 22, 29. the feet are selected from an arched foot, a stand-off foot, a slotted stand-off foot, a toed foot, a stand-off toed foot, a flat foot, a slotted flat foot, a zigzag foot, a box foot, and a combination thereof (70, see figures 3-4, 9-10).

Regarding to claims 3, 9, 23, 29. forming the feet to accommodate respective set volumes of adhesive there beneath for attaching the semiconductor heat spreader to a substrate (63/112, called conductive lead lamination).

Regarding to claims 4, 24. forming an electromagnetic interference shield for the channel (114, so that the magnetic field won't able to go through the metal shield).

Regarding to claims 5, 10, 25, 30. providing an additional unitary metallic plate (128/150); and forming the additional unitary metallic plate into a unitary auxiliary heat spreader configured for attachment on top of the semiconductor heat spreader (see figures 9-10).

Regarding to claims 6, 10, 26, 30, forming attachment means for attaching the unitary auxiliary heat spreader to the semiconductor heat spreader, the attachment means being selected

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from tabs, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms, and a combination thereof (legs, 124/126/158/160).

Regarding to claims 7, 27-28. forming the unitary metallic plate further comprises forming the unitary metallic plate in substantially a single metal forming process to also form an integral auxiliary heat spreader located on top of the panel (see figures 4, 9, 10).

Regarding to claims 8, 9, 21, 29. forming the unitary metallic plate further comprises forming the unitary metallic plate in substantially a single metal forming process into a cross-sectional profile that is substantially constant in at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate (see figures 3-4, 9-10).

10) Response to Argument

1- Claims 1-10, 21-30 are anticipated by Hawthorne et al.

a- Appellant contends that Hawthorne's the "cross-sectional profile of the plate is not substantially constant". However, Hawthorne does not disclose "fig. 4 section line" and "break line" in the fig. 3 that is drawn up by Appellant as shown in page 15 of the Brief. And Hawthorne also does not teach series of cross-sectional profiles of "fig. A, fig. B, fig. C, fig. D, fig. E, fig. F and fig. G" for fig. 3 that is drawn up by Appellant in page 16 of the Brief. Hawthorne clearly teaches at col. 3, line 42-43 of description of drawing "Fig. 4 is a sectional side elevation of the package of Fig. 3. And, "sectional side view" is known in the art as a section view formed by a plane cutting through an object that is at right angle to an axis. Hawthorne teaches at figs. 3-4, the section view is formed in a plane cutting through plate 70

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between standoff pins 74a/72a and 74b/72b having panel/channel 68 formed in the middle.

Hawthorne et al. teaches at figure 4, the cross-sectional profile of a plate 70 is formed between pins 74a/72a to 74b/72b, and with panel/channel 68 formed between pins 74a/72a and 74b/72b.

Hence, appellant's interpretation of Hawthorne reference is totally wrong. Hawthorne et al. also teaches at col. 6, lines 62-67: "It should be noted that the several **drawings** (all except FIG. 5) are **not to scale**, showing parts with different relative proportions and dimensions in order to more clearly illustrate significant features. Only FIG. 5 is drawn to correct scale".

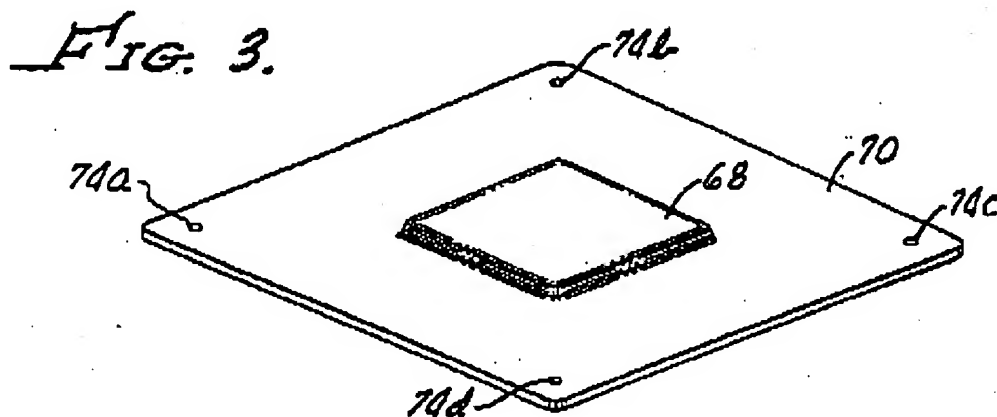


Fig. 3 above is not in scale see col. 6, lines 62-67.

Redrawn figure 3 below: see Final Office Action mailed on 1/29/2007.

FIG. 3.

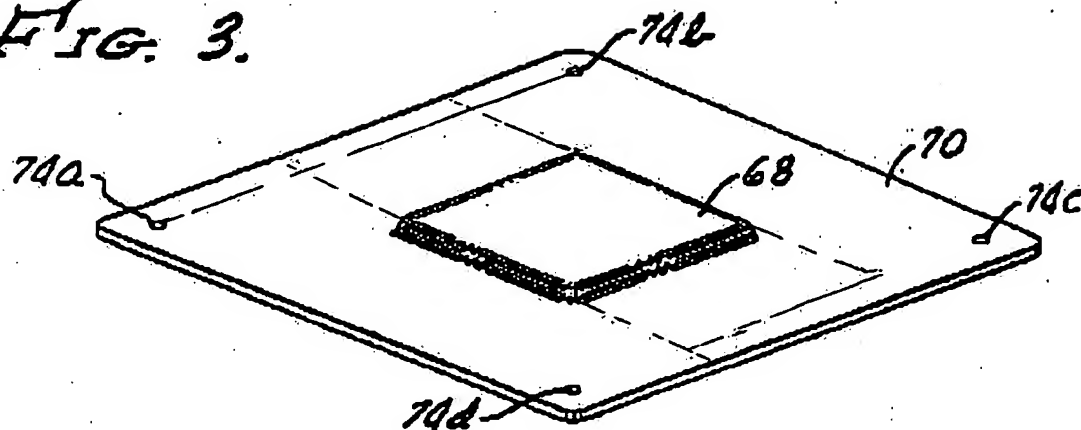
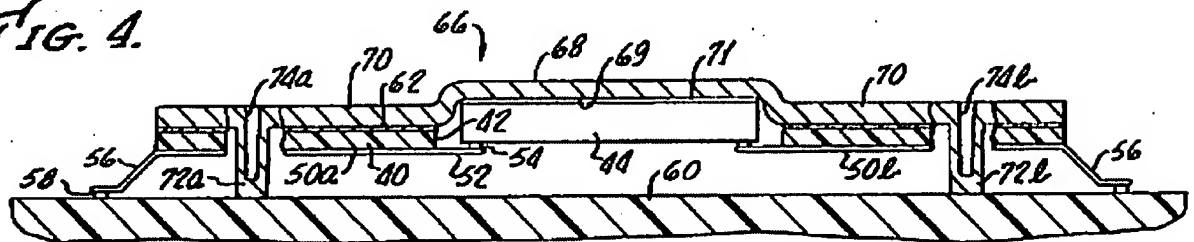


FIG. 4.



Since, figure 3 is not in scale, hence, the cross-sectional profile of figure 4 is coming from the redrawn figure 3 (see above and also see Final office action mailed 1/29/2007) having a plane cutting through the plate 70 at the line between standoff pins 74a and 74b with pannel/channel 68 formed in the middle. The pannel/channel 68 extends from the line between standoff pins 74a and 74b to the line between standoff pins 74d and 74c. Therefore, Hawthorne et al. clearly teaches the claimed limitation of a cross-sectional profile of the plate (70) that is **substantially** constant along at one horizontal direction that is perpendicular to the cross-sectional profile (between pins 74a/72a and 74b/72b) of the plate (70).

And, it is noted that "**substantially constant**" as claimed in the claimed invention is not required to be entirely constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate 70. The Court of Appeals for the Federal Circuit ("CAFC") defined "substantially" as having its ordinary meaning of "**largely but not wholly**

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that which is specified." Ecolab, Inc. v. Envirochem, Inc., 264 F.3d 1358, 60 USPQ2d (BNA) 1173 (Fed. Cir. 2001). The CAFC has also held that the word "substantially" gives some definitional leeway. Seattle Box Co. v. Indus. Crating & Packing, Inc., 731 F.2d 818, 829 (Fed. Cir. 1984). The word avoids undue limits to the words that "substantially" modifies. C.E. Equip. Co. v. United States, 13 USPQ2d (BNA) 1365, 1369 (N.D. Tex. 1990); In re Hauserman, Inc., 5 USPQ2d (BNA) 1157, 1158 (1989). Such usage of "substantially" in claims also appears, for example, in several of the patents of record in the present application (e.g., Zuo, Ommen, Lischner, & Takano).

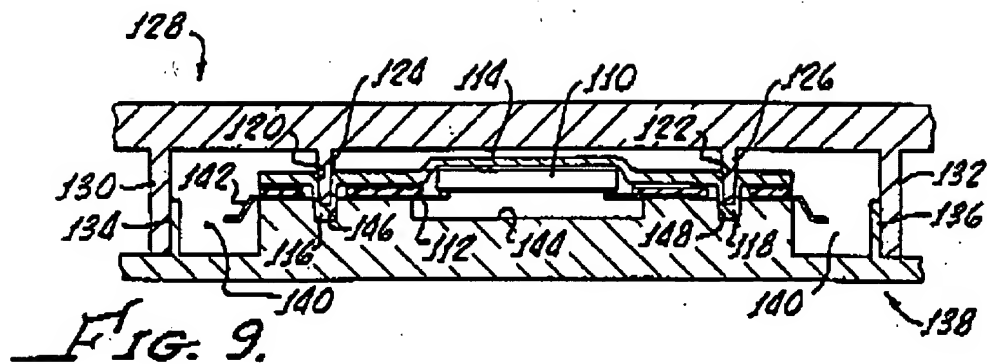
b- Regarding claims 2-8, 10, 22-28 and 30. Since, Hawthorne clearly teaches all the limitations as claimed in the independent claims 1, 9, 21 and 29 as described above, hence, dependent claims 2-8, 10, 22-28 and 30 are not patentable.

c- Regarding claims 4 and 24. Appellant contends the "element 114 is a heat spreader, not an electromagnetic interference shield". This is not found persuasive because Hawthorne et al. clearly teach in figures 9-10 and col. 5, lines 20-23, heat spreader is made of metal. Since, electromagnetic wave inherently cannot go through the metal layer (see any basic physics textbook), hence, heat spreader 114/66 is inherently an electromagnetic interference shield to the channel (44/110). And, in view of page 6, lines 25-25 of Instant Specification/Invention, the heat spreader 200 is made of metal. Hence, there is no reason that Hawthorne's metal heat spreader cannot be an electromagnetic interference shield.

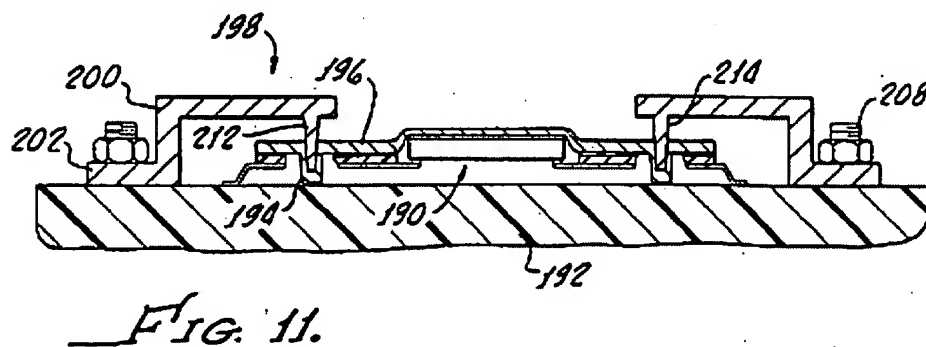
d- Regarding claims 5, 10, 25 and 30. Appellant contends Hawthorne et al. does not teach an auxiliary heat spreader. This is not found persuasive because Hawthorne et al. clearly teach in figure 11 or 9-10, the auxiliary heat spreader (198, a housing 198 may **enclosed entire package**, see col. 9, lines 14-17, or 128 or 150, called shipping tray) is an integral auxiliary heat spreader formed on the heat spreader (114). And, in view of figure 5 of Instant invention, there is not seen any difference between Hawthorne's auxiliary heat spreader 198 (entirely enclosed, see col. 9, lines 14-17, fig. 11) formed on top of heat spreader 196/114 and Instant invention's auxiliary heat spreader (500) formed on heat spreader 210.

e- Appellant contends "Hawthorne makes no reference to forming attachment means selected from tabs, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms, and a combination thereof". This is not found persuasive because Hawthorne et al. clearly teach in figure 9-11, heat spreader (114), auxiliary heat spreader (198, a housing, or 128 or 150) forming attachment means selected from tab, locking tabs, deformable sides, side ledges, side clips, clip bosses, center clips, side arms (124/126/130/132/158/160, 194, 200, 202, 208, 212, 214, see figures 9-11) which is similar to the instant invention in figure 5, wherein the auxiliary heat spreader (500) forms on top of the heat spreader (210).

Hawthorne's Invention



Housing 198 below may enclosed entire package, see col. 9, lines 14-17.



f- Regarding claims 7 and 27-28, appellant contends Hawthorne et al. do not teach integral auxiliary heat spreader. This is not found persuasive because Hawthorne et al. clearly teach in figure 11 or 9-10, the auxiliary heat spreader (198, a housing 198 may **enclosed entire package**, see col. 9, lines 14-17, or 128 or 150, called shipping tray) is an integral auxiliary heat spreader formed on the heat spreader (114). And, in view of figure 5 of Instant invention, there is not seen any difference between Hawthorne's auxiliary heat spreader 198 (entirely enclosed, see col. 9, lines 14-17, fig. 11) formed on top of heat spreader 196/114 and Instant invention's auxiliary heat spreader (500) formed on heat spreader 210.

g- Regarding claims 8, 9, 21 and 29. Appellant contends Hawthorne made no reference to forming a cross-sectional profile that is **substantially** constant in at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate. This is not found persuasive because Hawthorne clearly teaches at col. 3, line 42-43 of description of drawing, "Fig. 4 is a sectional side elevation of the package of Fig. 3". And, "sectional side view" is known in the art as a section view formed by a plane cutting through an object that is at right angle to an axis. Hawthorne teaches at figs. 3-4, the section view is formed in a plane cutting through the plate 70 between standoff pins 74a/72a and 74b/72b having panel/channel 68 formed in the middle. Hence, appellant's interpretation of Hawthorne reference is totally wrong. Hawthorne et al. also teaches at col. 6, lines 63-67: "It should be noted that the several **drawings** (all except FIG. 5) are **not to scale**, showing parts with different relative proportions and dimensions in order to more clearly illustrate significant features. Only FIG. 5 is drawn to correct scale".

Appellant's own drawings in page 15 of the Brief that "fig. 4 section line" and "break line" in fig. 3 are not taught by Hawthorne. And, Appellant's series of cross-sectional profiles of fig. A, fig. B, fig. C, fig. D, fig. E, fig. F and fig. G for fig. 3 in page 16 of the Brief also are not taught by Hawthorne et al.

Since, Hawthorne's figure 3 is not in scale, hence, the cross-sectional profile of figure 4 is coming from the redrawn figure 3 as shown in the Final Office Action mailed on 1/29/2007, the cross-sectional profile of a plate 70 is formed between pins 74a/72a to 74b/72b, and with panel/channel 68 formed between pins 74a/72a and 74b/72b. Therefore, Hawthorne et al. clearly teaches the claimed limitation of a cross-sectional profile of the plate (70) that is

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substantially constant along at one horizontal direction that is perpendicular to the cross-sectional profile (between pins 74a/72a and 74b/72b) of the plate (70).

And, the “**substantially constant**” as claimed in the claimed invention is not required to be entirely constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate 70.

From above, Hawthorne et al. clearly teaches the cross-sectional profile of the plate that is **substantially** constant along at least one horizontal direction that is perpendicular to the cross-sectional profile of the plate. Hence, the rejection of claims 1-10, 21-30 under 35 U.S.C 102(b) as anticipated by Hawthorne et al. clearly meets the burden under 35 U.S.C. 102(b).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Thanh Nguyen

/Thanh Nguyen/

Conferees:

Carl Whitehead, Jr. (SPE)



David Blum